GW-Pro2

Samsung OTP/MTP Gang Programmer

Revision 1.2

User's Manual for GW-Pro2

(Samsung OTP/MTP Gang Programmer)

Sep. 1, 2009

C&A Technology

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1. Main features

GW-Pro2 is a high-speed gang programmer for the Samsung serial OTP/MTP devices. It can program 8 devices at a time in Samsung standard DIP, SOP or QFP package adapter socket on PC-based or stand-alone mode. Main features are as follows:

- **PC-based Menu-driven software support for simple operation**
  (Support Window 95/98/2000/NT operating system)
- **Stand-alone operation is available**
- **Buffer memory data can be backed up during power down**
  <Note> Flash memory is used as buffer memory, so endurance of the buffer memory is limited by 1000 times. (Download and Read master operation should be limited by 1000 times)

  (After a data file is downloaded in the PC-based mode, it is available to turn off power of GW-Pro2 and move it to the factory site for the mass production)
- **Very fast program including verify time**
  (OTP: about 0.5 seconds per 1K Bytes, MTP: about 0.3 seconds per 1K Bytes)
- **Load file, Buffer dump, Read Master, Program, Verify, Read protection**, **Checksum, Auto program and Blank check function. In addition, Erase, LDC protection, Hard Lock functions are included in the MTP mode.**
- **3.3V operation MTP(Flash) devices support (Vdd is selectable in the menu)**
- **Total number of pass and fail devices after programming are displayed and memorized.**
- **Key lock for the stand-alone operation can be selected in the PC-base mode**
  After all desired functions are set and the Key lock option is selected in the PC-based mode, the GW-Pro2 can be operated by single external key ("PROGRAM") in the stand-alone mode. This allows one key operation to avoid any mistake for mass production programming.
- **Maximum buffer memory is 1M bytes**
- **Short circuit detection for overload of the programming voltage power (Vpp)**.
- **Built-in 90 VAC ~ 240 VAC, 47~65Hz universal power supply**
- **Full line-ups of programming socket adapter for Samsung OTPs and MTPs.**
  (Sold separately, Single or 8-gang pack)

2. General descriptions

2.1 Packing Includes

(1) GW-Pro2 Installation diskette
(2) GW-Pro2 Main body
(3) RS-232C Cable
(4) Power Cable(110/220VAC)
(5) User's Manual

2.2 Electrical Requirements

(1) Operating Voltage: 90-240 VAC
(2) Frequency Range: 48-65 Hz

2.3 Host system Requirements (Only PC-based mode)

(1) IBM or compatible 486/Pentium with minimum 8MB extended memory
(2) Windows95/98/2000/NT operating system with minimum 5MB of free hard disk space
(3) One RS-232C serial port(COM1-COM4, 9 pin type)
(4) 3.5" floppy disk drive

(Note)

Device-specific adapter sockets are needed for programming various package types of devices. Please visit us for more information at home page http://www.cnatech.com.
(The adapter sockets are sold separately, see Appendix A, B, C and D)

2.4 Device support

GW-Pro2 supports all of Samsung SERIAL type OTP and MTP (Flash) devices only.
MTP devices with 3.3V operation voltage are available.

(Note) Parallel type OTPs such as KS88P0916/P0416/P0424/P01424 are not supported
Above devices will not supplied by EOL (End of Life) notice from March 2000.

2.5 Software installation

(1) Insert the installation disk #1 into floppy disk drive

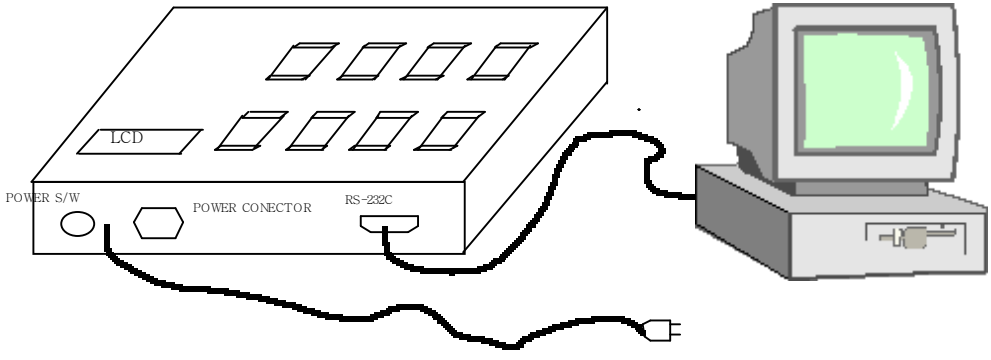
(2) Execute "Setup.exe" file on the installation disk 1

(3) Follow the instruction message on the screen. When the installation is finished, the program icon of the GW-Pro2 will be generated in the start/programs menu.

2.6 Hardware setup

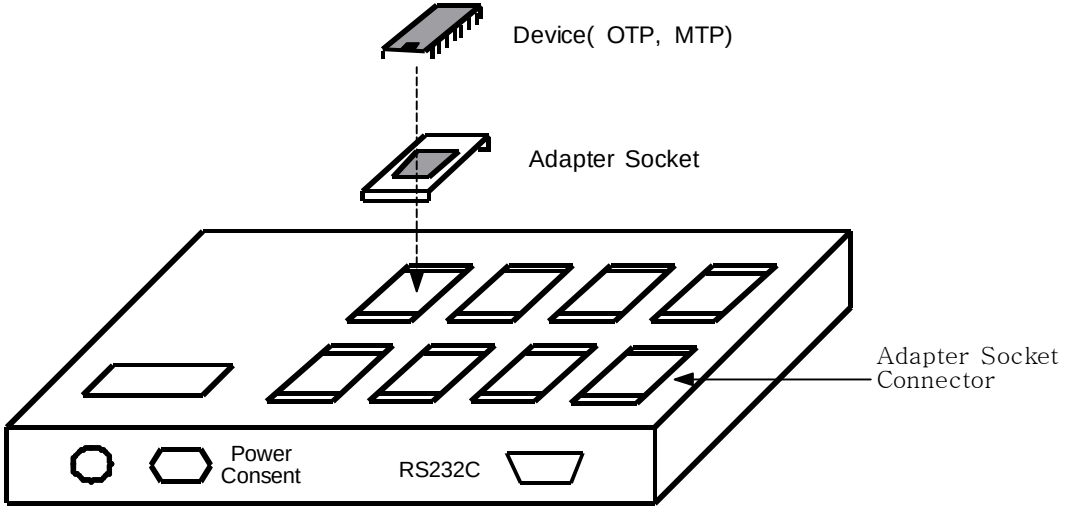
(1) Set as below figure.

(2) Turn on the power switch of the GW-Pro2 system, and check if the LCD screen blinks three times. If it dose not blink, turn the power switch off and turn on again a few seconds later.



2.7 How to mount devices on the GW-Pro2 system

Every device needs it's own adapter socket for operation, you choose a set of adapter socket (8 each for set) and setup as follows. (See Appendix A, B, C, D Adapter socket table)



3. Operating descriptions

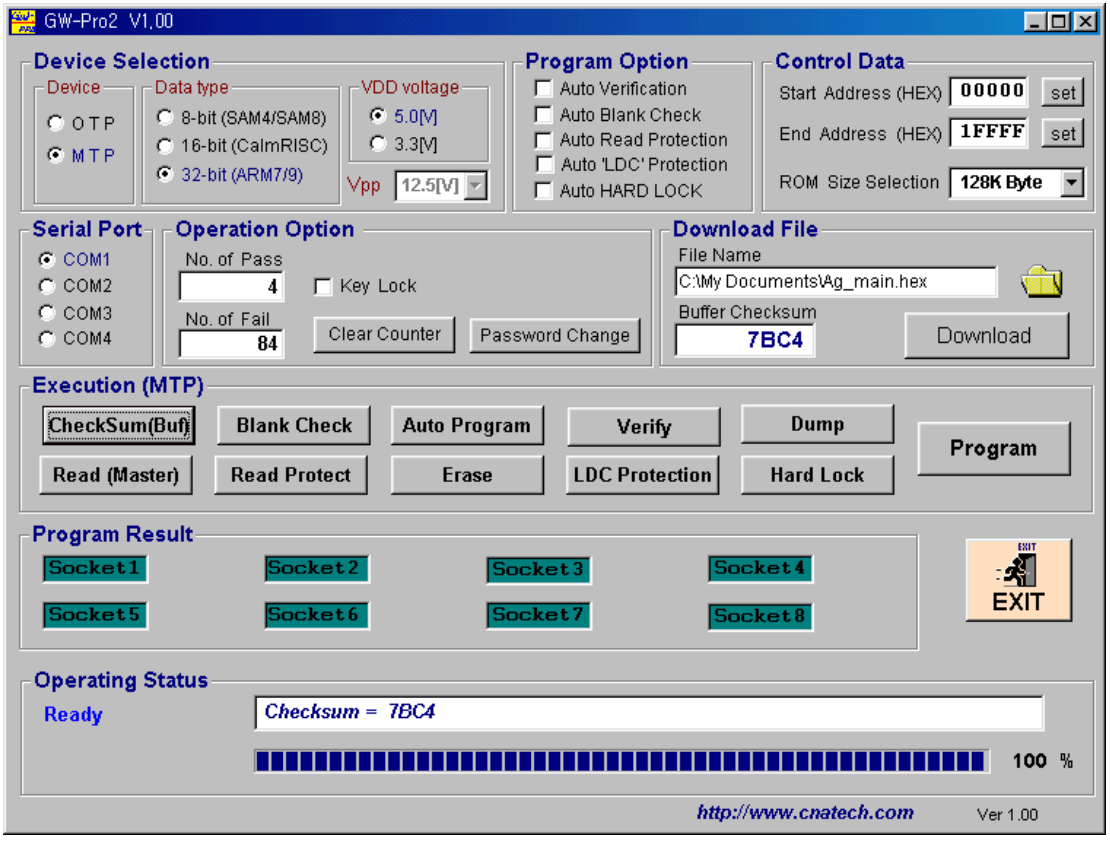
There are two operating modes. One is PC-based user-interface mode, the other is stand-alone mode.

3.1 PC-based user-interface mode

3.1.1 Start up GW-Pro2

(1) Turn on the power switch of GW-Pro2 system

(2) Click GW-Pro2 icon under the programs on WIN95/98/2000/NT start menu.



After running GW-Pro2 driver, the above window will be appeared. If the port was not selected, You should select the corresponding port first.

3.1.2 Menu

(1) Device Selection

[Device]

- OTP: Select this item if you want to use the serial type OTP devices.
- **MTP**: Select this item if you want to use the serial type MTP devices (Flash type program memory based MCU).

[Data Type]

This selection should be decided in accordance with the ROM data type of devices. If device type is selected as OTP, this option (Data type) will be set to the 8-bit (SAM4/SAM8) automatically because currently all existing OTPs belong to 8-bit data types of ROM format.

- 8-bit (SAM4/SAM8): Select this item if devices are 8-bit word of ROM format such as KS51P860 (S3P1860), SAM4 (KS57 series, or S3P7xxx series), and SAM8 (KS86/88 series, S3P8/9xxx, or S3F8/9xxx series).
- 16-bit (CalmRISC): Select this item if devices are 16-bit word of ROM format such as CalmRISC (KS85 series, S3PBxxx, or S3FBxxx series).
- 32-bit (ARM): Select this item if devices are 32-bit word of ROM format such as ARM7 (KS17/32 series, S3P3/4xxx, S3F3/4xxx series).

[VDD voltage]

This selection should be decided in accordance with the operating voltage of devices. If the device type is selected as OTP, this option (Vdd voltage) will be set to the 5.0[V] automatically because currently all existing OTPs belong to the 5.0V of operating voltage.

- 5.0[V] : Select this item if devices have the 5.0V-operation voltage
- 3.3[V] : Select this item if devices have the 3.3V-operation voltage

(2) Program Option

This Check box helps to program OTP/MTP simply.

- Auto verification: After programming, verify the devices automatically.
- **Auto blank checking**: Before programming, check the devices are blank or not.
- **Auto read protection**: After programming, make devices unreadable for code security.
- **Auto 'LDC' protection**: After programming, make devices as LDC instruction protection. This option is available when MTP device is selected in the Device type menu.
- **Auto HARD LOCK**: After programming, make devices as Hard Lock. This option is available when MTP device is selected in the Device type menu.

(3) Control data

- Start address*:*
This is the start address of the buffer memory for reading/writing range.
In the most of operation, the start address should be “00000”.

- End address:
This is the last address of device for reading/writing range.

(Note)
The end address will be changed to suit the last data address of a hex data file after a hex data file is downloaded. Also you can change the end address as desired address by keyboard.

The end address must be the same or less than ROM size of devices when you type the end address. If the end address is over than the last address of ROM size in the programming operation, the remained buffer data which is located from the last address to the end address will be overwritten into the device memory from the initial address "0000". This is wrong operation.
To avoid wrong operation, don't touch the end address after downloading a file except it is really needed to change. Also, it is necessary to set the Key lock to avoid operator’s mistake in the stand-alone mode because 'Read operation' and ‘ROM size selection' by operator’s mistake in the stand-alone mode will change the buffer memory data and the end address of the buffer memory range as wrong value.

- ROM size Selection
It is easy to set the end address by using this combo box when you are aware of the ROM size of devices for the read operation.

(4) Operation Option

This menu helps program simply and controls the key lock function of the stand-alone mode.

- Key Lock:
If the Key lock is selected, the following functions in the stand-alone mode will be protected. This function helps to avoid an operator's mistake in the mass production line.

- ◆ READ operation function will be protected to avoid the buffer data change
- ◆ ROM size selection function will be protected to avoid the end address change
- ◆ Device selection (Device, Data type, VDD voltage) function will be protected.
- ◆ Program option (Read protection, LDC, Hard Lock…) selection function will be protected to avoid the pre-set mode change.

- No. of Pass:

This number means the total accumulated quantity of the pass devices after programming.

- No. of Fail:
This number means the total accumulated quantity of the failed devices after programming. If 8 of devices are not mounted into 8 adapter sockets, No. of Fail will not be a correct value of the failed devices because the blanked sockets are always treated as the failed devices.

- Clear counter:
This button will clear "No. of Pass" and "No. of Fail" into zero. This button requires your password.

- Password change:
This is used to change your password. (Default password is "000000")

(3) Download File

- File Name:
Input the name of a file to be downloaded into the GW-Pro2 buffer memory. It can be possible to browse the download file using the file open icon.

- Buffer checksum:
Display the checksum of the buffer memory. Its value will be changed in case of changing the buffer address, after downloading a file or reading data from the master device to the buffer memory. If you want to know the current checksum of the buffer memory, click 'Checksum(Buf)' button in the execution menu box.

- Download:
Download a selected file to the buffer memory of GW-Pro2.
If you want to download another file such as the font ROM for OSD applications after downloading the program code file, you can download another file after changing the start address and the end address to corresponding address of another file in the control data menu box. To get checksum of the total data file (two files), click 'CheckSum(Buf)' command button. Using this function, you can program the program code and the OSD font data simultaneously to the devices in your Color TV applications. The buffer memory data will be backed up during the system power down because the buffer memory was designed with non-volatile memory. (The endurance of the buffer memory is one thousand times)

(4) Execution

- Checksum (Buf):
Get checksum of the buffer memory between the Start and End address.

- Blank check:
Check if devices are the blank data or not.

- Auto Program:
Check if devices are blank, and write the buffer memory to devices and verify automatically. Verify result will be displayed on the PC screen and LED lamp of GW-Pro2.

- Verify:
Compare the devices' data with the buffer memory. Verify result will be displayed on the PC screen and LED lamp of GW-Pro2. (The red-color LED indicates "Fail", the green-color LED indicates "Pass")

- Dump:
View the contents of the buffer memory on the PC screen.

- Read (Master):
Copy data of device in the master socket (Socket 1) to the buffer memory.
(Only one device in the socket 1 can be read into the buffer memory)

- Read protection:
Make the devices unreadable for code security.

- Erase:
Erase MTP into blank data 'FF'. This command is available for only MTP device.

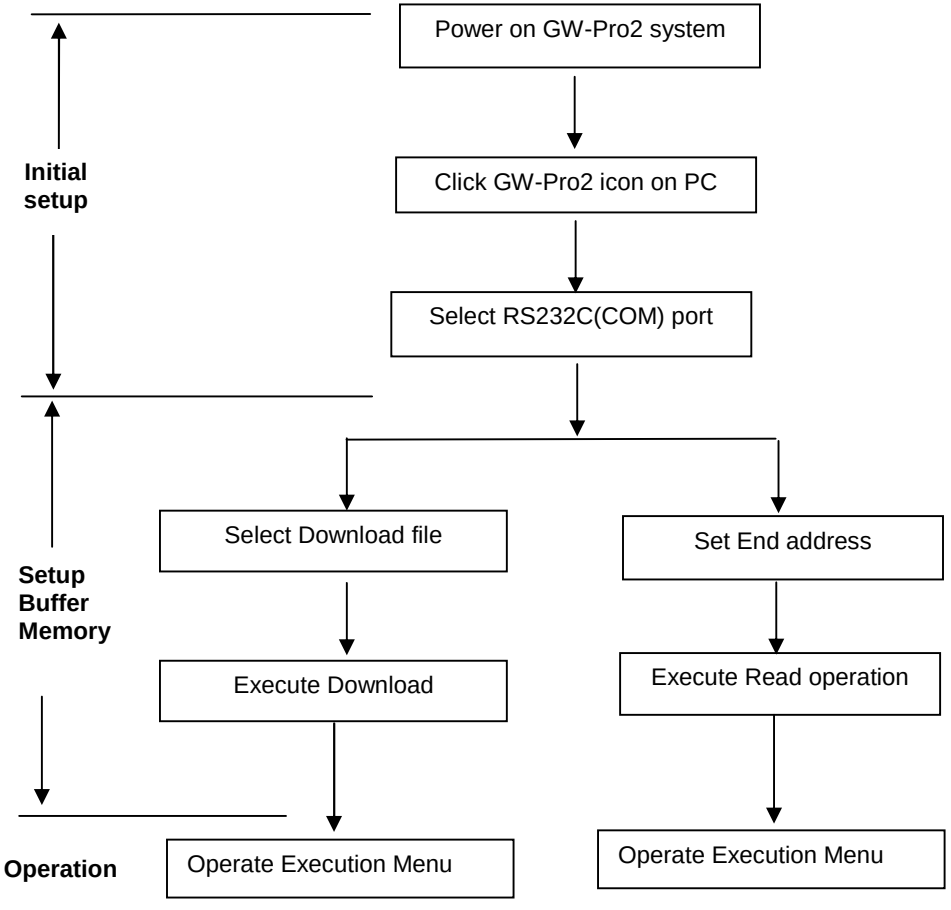
- LDC protection:
Make the LDC instruction of MTPs not executable. This command is available for only MTP device.

- Hard Lock protection:
Make the MTPs data not programmable to avoid a data change by operator's mistakes or electrical sock. This command is available for only MTP device.

- Program:
Write the buffer memory to devices. If the auto verification option is checked, verify operation will be performed automatically after programming.

(Note) All execution menus are operated under Start ("0000") and End address except the read protection, Erase, the LDC protection, and the Hard Lock operation.

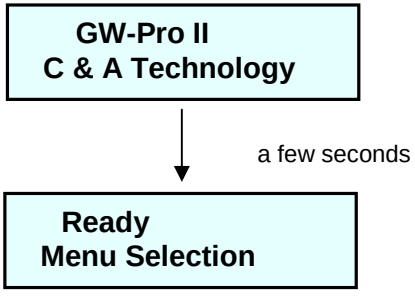
3.1.3 Operating sequence

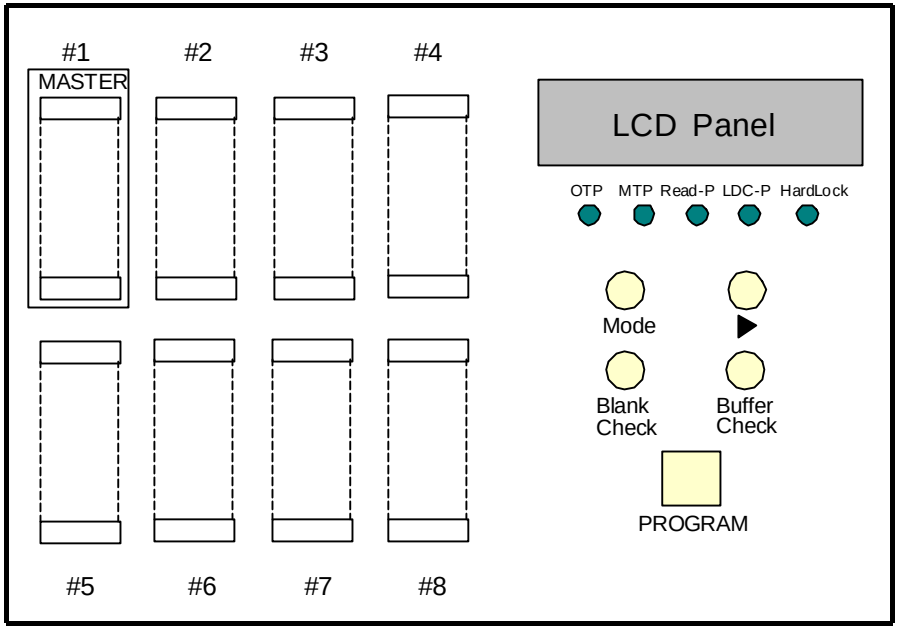


3.2 Stand-alone operation mode

3.2.1 Start up GW-Pro2

Turn on the power switch of the GW-Pro2 system, and check if the LCD screen blinks three times. If the LCD dose not blink, turn the power switch off and turn on again a few seconds later. And the following message will be displayed on LCD panel simultaneously.





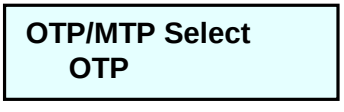
3.2.2 Key function

(1) MODE Key

This key can be used to select the operating mode such as the OTP/MTP device type, the ROM size for device read operation, Auto read protection, Buzzer on/off selection, Verify, Read master operation, and to check the total quantity of pass or failed devices. Also it can be used to operate the Erase function and to select the Auto LDC protection, Auto Hard Lock option for MTP devices.

- Mode 1: OTP/MTP Selection

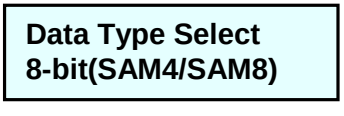
This mode is used to select device type; OTP or MTP. If the MODE key is pressed from initial LCD display (Ready, Menu selection), "OTP/MTP Select" and already selected device type will be displayed on 1st and on 2nd line of LCD panel respectively. You can select other device type using the cursor key (►).
(OTP -> MTP[Flash] -> OTP)



This mode is not activated if the Key Lock is selected in the PC-based interface mode.

- Mode 2: Data Type Selection – MTP only

This mode is used to select the types of the ROM data format; 8-bit(SAM4/SAM8), 16-bit (CalmRISC), or 32-bit(ARM)P. If OTP device was selected at the previous mode, This mode will not be activated and the data type is selected as the 8-bit(SAM4/SAM8) type automatically because all of the existing OTPs belong to these families only . You can select other data type using the cursor key (►).
(8-bit -> 16-bit -> 32-bit -> 8-bit)

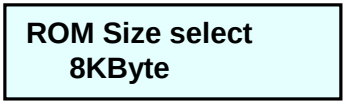


This mode will not be activated if the Key Lock is selected in the PC-based interface mode.

- Mode 3: ROM size Selection

This mode is used to select ROM size of devices for read and program operation in the stand-alone operation. ROM size indicates the end address. (For example, 4Kbyte -> 0FFFh). "ROM Size Select" and already selected ROM size will be displayed on 1st and 2nd line of LCD panel respectively. You can select other ROM size by using the cursor key (►).

(1KB -> 2KB -> 4KB -> 8KB -> 12KB -> 16KB -> 24KB -> 32KB -> 48KB -> 64KB
< - End Address <- 1MB <- 768KB <- ……..……256KB <- 128KB <-96KB <-)



If you can't find the desired ROM size from LCD panel, You can enter your desired end address by using the cursor key (Digit select), Up and Down keys in the End address step.

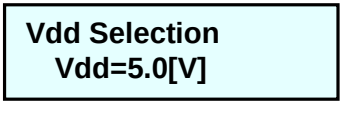
This mode will not be activated if the Key Lock is selected in the PC-based interface mode.

< Note>
The ROM size must be same as (or less than) the ROM size of real devices when you select ROM size. If the selected ROM size is over than memory size of real devices, the buffer data which are located over than the selected ROM size will be overwritten into the device memory from the initial address "0000" in the programming mode. This makes your devices fail.

- Mode 4: VDD voltage of device Selection – MTP only

This mode is used to select operating voltage (VDD) of the MTP device. You should select proper Vdd value in accordance with the operating voltage of MTP devices. There are two types of operating voltage; 5.0[V] or 3.3[V] in the existing Samsung MTPs. You can select Vdd voltage by using the cursor key (►).

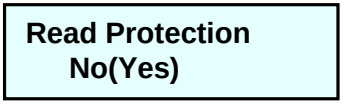
(5.0[V] -> 3.3[V] -> 5.0[V] ->)



This mode will not be activated if the Key Lock is selected in the PC-based interface mode.

- Mode 5: Auto Read Protection

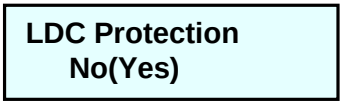
This mode is used to select the Auto read protection or not. If the auto read protection is selected, the read protection will be executed automatically after programming and verifying. You can select the auto read protection or not by using the cursor key (►).
(No -> Yes -> No ->)



This mode will not be activated if the Key Lock is selected in the PC-based interface mode. If the auto read protection is selected, Read protection indicator (LED) will be on.

- Mode 6: Auto LDC Protection – MTP only

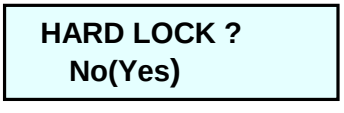
This mode is used to select the auto LDC protection or not. If the auto LDC protection is selected, the LDC protection will be executed automatically after programming and verifying MTP devices. You can select the auto LDC protection or not by using the cursor key (►).
(No -> Yes -> No ->)



This mode will not be activated if the Key Lock is selected in the PC-based interface mode. If the auto LDC protection is selected, the LDC protection indicator (LED) will be on.

- Mode 7: Auto Hard Lock Protection – MTP only

This mode is used to select the auto Hard Lock protection or not. If the auto Hard Lock protection is selected, the Hard Lock protection will be executed automatically after programming and verifying MTP devices. You can select the auto Hard Lock protection or not by using the cursor key (►).
(No -> Yes -> No ->)



This mode will not be activated if the Key Lock is selected in the PC-based interface mode. If the auto Hard Lock protection is selected, Hard Lock protection indicator (LED) will be on.

- Mode 8: Check number of Pass and Fail devices

This mode is used to check how many quantities are pass or failed devices.
(Number of Pass and Fail devices can be cleared only PC-based mode using 'Clear counter' command button)

```
Pass= xxxxxx
Fail= xxxxxx
```

- Mode 9: Verify operation mode

This mode is used to verify the data between devices and the buffer memory. You can start to verify by pressing cursor key (►).

```
   Verify ?
Push cursor key !
```

After verifying, the verifying result will be displayed as below. Also the LED indicators on the socket adapters will be on. (Red color LED: Fail, Green color LED: Pass)

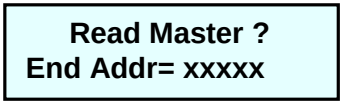
```
Verify Done !!
1G2G3F4G5G6G7G8F
```

"1G" means that device in the socket #1 is verifying pass.
"3F" means that device in the socket #3 is verifying fail.

- To escape from the MODE selection to the Ready state directly, press any key except the cursor key (►).

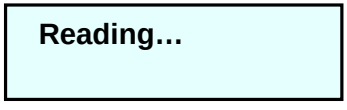
- Mode 10: Read operation mode

This mode is used to copy device data in the master socket (Socket #1) into the buffer memory. This is the double-operation key to confirm operation again. If the cursor key is pressed first time, only the following message will be displayed on the LCD panel without read operation.

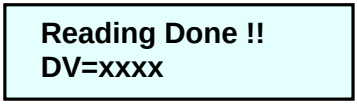


If you want to change the end address for the other devices that have different ROM size from the current setting device, you can select the desired ROM size by using the MODE and the cursor key before the read operation. READ mode will not be activated if the Key Lock is selected in the PC-based interface mode.

If pressing the cursor key second time, the following message will be displayed on the LCD panel and READ operation will be executed. If you want to escape from this mode without read operation, press any other key except the cursor key.



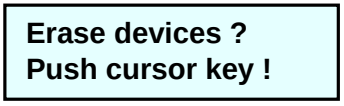
After the read operation is finished, following message will be displayed on the LCD panel. You must check if checksum of device (DV=xxxx) and buffer (BUF=xxxx) are same value before programming operation. If checksums are different each other, an error message will be displayed on LCD panel. Try to read operation again. If the error occur again, please contact C & A Technology for the technical service.



- To escape from the MODE selection to Ready state directly, press any key except the cursor key (►).

- Mode 11: Erase operation mode – MTP only

This mode is used to erase data of the MTP devices into 'FF'. You can start to erase by pressing cursor key (►).

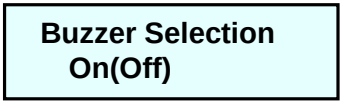


After erasing MTPs, the following message will be displayed as below.

After erasing operation, GW-Pro2 does not verify that devices are really erased or not. So, if the MTP device was already failed, it will not be erased even if the erase operation done.

- Mode 12: Buzzer On/Off Selection

This mode is used to select the buzzer sound on or off. If the buzzer is selected "On", the buzzer sound will be activated whenever programming is finished. You can select buzzer on or off by using the cursor key (►).
(On -> Off -> On)



(2) Cursor (▶) Key

This key is used to select the sub-mode menu in the ROM size and Read, LDC, Hard Lock protection selection mode. (After selecting the desired sub-mode menu, press the MODE key to store the selected sub-mode). Also, the cursor key can be used to activate the verifying, erase and read operations.

(3) Blank check/Up(▶) Key

This key is used to check if the data of devices is blank (FF) or not. You can start to check by pressing 'Blank Check' key. After blank checking, the blank-check result will be displayed as below. Also the LED indicators on the socket adapters will be on. (Red color LED: Fail, Green color LED: Pass). Also this key can be used to change the ROM size upward in the End address step of the ROM size Selection mode.

Blank Result
1G2G3F4G5G6G7G8F

"1G" means that device in the socket #1 is blank OK.
"3F" means that device in the socket #3 is not blank.

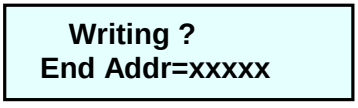
(4) Buffer Checksum/Down(▶) Key

This key is used to make checksum of the buffer memory. If 'Buffer Check' key is pressed, buffer checksum operation will be executed. After the checksum operation is finished in a few seconds, the following message will be displayed on the LCD panel. When you use GW-Pro2 at first time after power on, please check checksum is correct before programming to verify the buffer data. Also this key can be used to change the ROM size downward in the End address step of the ROM size Selection mode.

Checksum Done !!
Checksum=xxxx

(5) Program Key

This key is used to program the buffer memory into the devices, and verify the buffer memory with the devices' data. If the auto read, LDC, or Hard Lock protection is selected, each protection operation is also executed automatically after verifying. This is the double-operating key to confirm operation again. If the PROGRAM key is pressed first time, only the following message will be displayed on the LCD panel without starting of the programming operation.



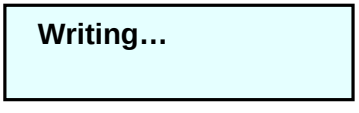
Be sure that the 'End address' is correct value:

The ROM size (End address) must be same as (or less than) the memory size of the real device when you program. If the selected ROM size is over than the last address of a real devices, the buffer data which are located over than the selected ROM size will be overwritten into the memory of target devices from the initial address "0000". This makes devices fail operation.

<For example>
- Selected ROM size=8Kbyte(1FFFh)
- Target device=KS57P0504 (4Kbyte:last address->0FFFh)

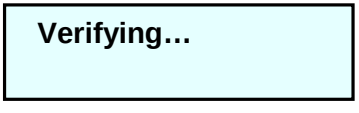
The buffer memory located in range of address 1000h to 1FFFh will be overwritten from the address '0000' to '0FFFh' of the KS57P0504 OTP again.

If pressing the PROGRAM key again, the following message will be displayed on the LCD panel and the program and verify operation will be executed. If you want to escape from this mode without program operation, press any other key except the PROGRAM key.



When programming

After a few seconds depending on data size



When verifying

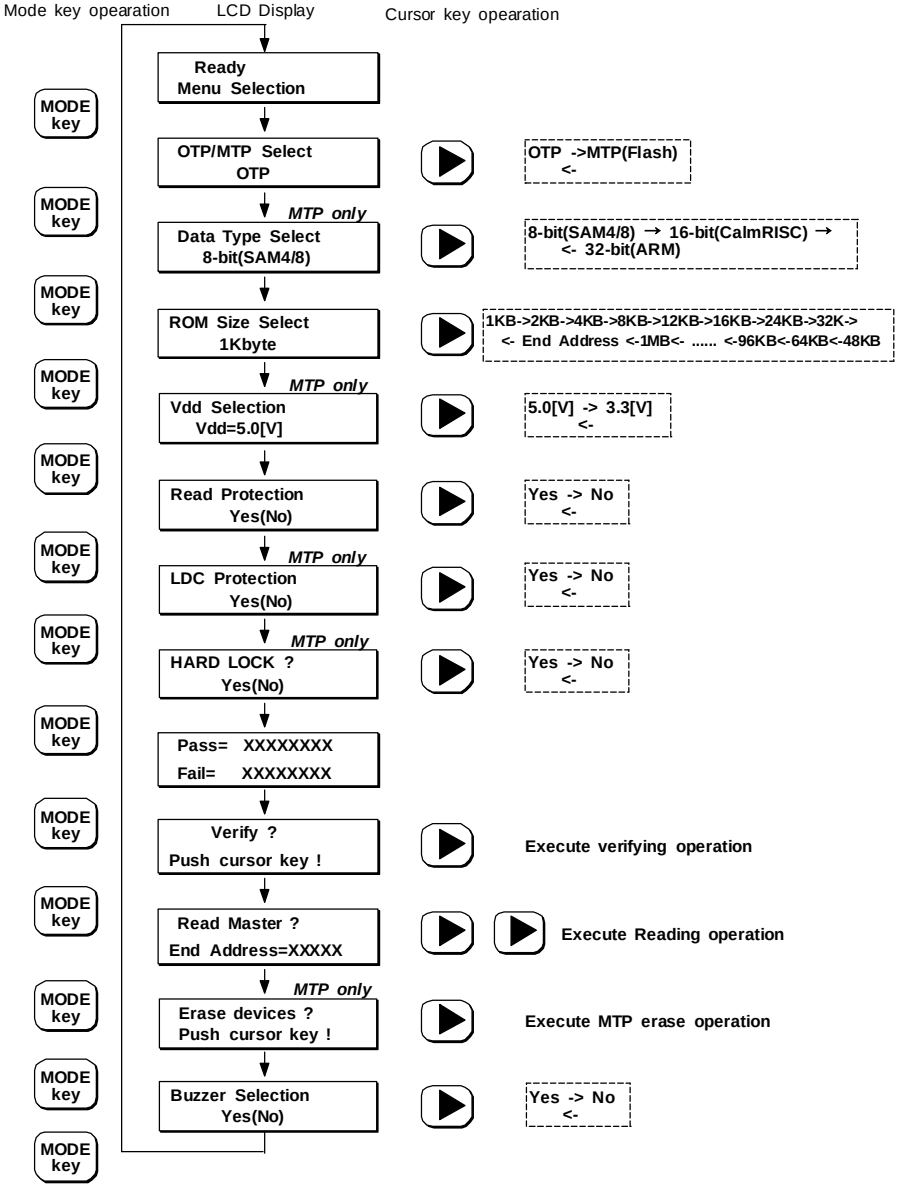
After the program and verify operations are finished, verify result message will be displayed on the LCD panel and also displayed with LED indicators on the adapter socket boards. If the red-colored LED is on, verifying result is fail. If the green-colored LED is on, verifying result is pass. (There are no the red-colored LED lamps depending on the adapter sockets)

Writing Done !!
1G2G3G4G5F6G7G8F

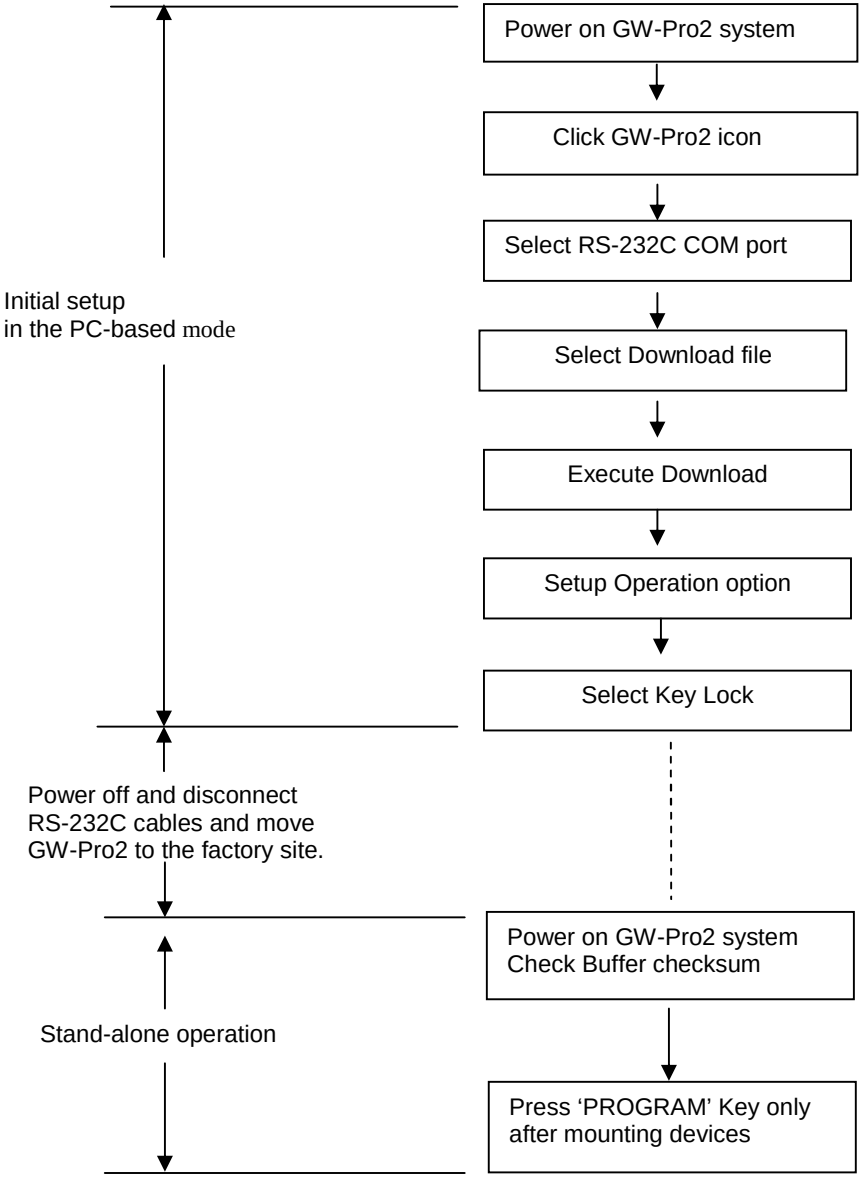
"1G" means that device in the socket #1 is verifying pass.
"5F" means that device in the socket #5 is verifying fail.

3.2.3 Operating sequence

(1) Operating mode selection



(2) Program sequence in mass production



< Appendix A > SAM4 (KS57Pxxxx, S3P7xxx Series) adapter socket table

Device name		ROM size	End Address	Package type	Adapter socket (New name)
New	Old				
S3P7048	KS57P0408	8KB	1FFFh	42SDIP 44QFP	GA57P0408-42SDIP(GA7048-42SDIP) GA57P0408-44QFP(GA7048-44QFP)
S3P7054/ S3P70F4	KS57P0504/ KS57P01504	4KB	0FFFh	30SDIP 32SOP	GA-30SDIP GA-32SOP
S3P7065	KS57P0616	16KB	3FFFh	42SDIP 44QFP	GA-42SDIP GA-44QFP
S3P72B9 S3P72M9	KS57P21132 KS57P22132	32KB	7FFFh	128QFP	GA-128QFP
S3P72C8	KS57P21208	8KB	1FFFh	42SDIP 44QFP	GA-42SDIP GA-44QFP
S3P72G9	KS57P21632	32KB	7FFFh	100QFP	GA-100QFP
S3P72H8	KS57P21708	8KB	1FFFh	64QFP	GA-64QFP
S3P72I9	KS57P21832	32KB	7FFFh	100QFP	GA-100QFP
S3P7234 S3P72N4	KS57P2304 KS57P22304	4KB	0FFFh	64QFP	GA-64QFP
S3P7235 S3P72N5	KS57P2316 KS57P22316	16KB	3FFFh	80QFP	GA-80QFP
S3P7295	KS57P2916	16KB	3FFFh	80QFP	GA-80QFP
S3P72E8 S3P72Q5	KS57P21408 KS57P22416	8KB 16KB	1FFFh 3FFFh	100QFP	GA-100QFP
S3P72F5 S3P72P9	KS57P21516 KS57P22532	16KB 32KB	3FFFh 7FFFh	100QFP	GA-100QFP
S3P7324	KS57P3204	4KB	0FFFh	64QFP	GA-64QFP
S3P7335	KS57P3316	16KB	3FFFh	80QFP	GA-80QFP
S3P7414/ S3P7434	KS57P4104/ KS57P4304	4KB	0FFFh	42SDIP 44QFP	GA-42SDIP GA-44QFP
S3P7424	KS57P4204	4KB	0FFFh	30SDIP 28SOP	GA-30SDIP GA-28SOP
S3P7515	KS57P5116	16KB	3FFFh	64SDIP 64QFP	GA57P5116-64SDIP(GA7515-64SDIP) GA57P5116-64QFP(GA7515-64QFP)
S3P7528	KS57P5208	8KB	1FFFh	42SDIP 44QFP	GA-42SDIP GA-44QFP
S3P7538/ S3P7533	KS57P5308/ KS57P5312	8KB 12KB	1FFFh 2FFFH	30SDIP 32SOP	GA-30SDIP GA-32SOP
S3P7544	KS57P5404	4KB	0FFFh	24SDIP 24SOP	GA57P5404-24SDIP(GA7544-24SDIP) GA57P5404-24SOP(GA7544-24SOP)
S3P7559	KS57P5532	32KB	7FFFh	64SDIP 64QFP	GA57P5116-64SDIP(GA7515-64SDIP) GA57P5116-64QFP(GA7515-64QFP)
S3P7565	KS57P5616	16KB	3FFFh	100QFP	GA-100QFP
S3P7574	KS57P5704	4KB	0FFFh	64QFP	GA-64QFP

< Appendix B > SAM8 (S3P8xxx, or S3F8xxx Series) adapter socket table

Device name		ROM size	End Address	Package type	Adapter socket (New name)
New	Old				
S3P80A5/ S3P80B5	KS88P01016/ KS88P01116	16KB	3FFFh	24SDIP 24SOP	GA-24SDIP GA-24SOP
S3P80E7	KS88P01424	24KB	5FFFh	32SDIP 32SOP 40DIP	GA88P0916-32SDIP(GA8095-32SDIP) GA88P0916-32SOP(GA8095-32SOP) GA88P0424-40DIP(GA8047-40DIP)
S3P80F9/ S3P80G9	KS88P01532/ KS88P01632	32KB	7FFFh	42SDIP 44QFP	GA-42SDIP GA-44QFP
S3P8045/ S3P8047	KS88P0416/ KS88P0424	16KB 24KB	3FFFh 5FFFh	32SDIP 32SOP 40DIP	GA88P0916-32SDIP(GA8095-32SDIP) GA88P0916-32SOP(GA8095-32SOP) GA88P0424-40DIP(GA8047-40DIP)
S3P8075	KS88P0716	16KB	3FFFh	64SDIP 64QFP	GA-64SDIP GA-64QFP
S3P8095	KS88P0916	16KB	3FFFh	32SDIP 32SOP	GA88P0916-32SDIP(GA8095-32SDIP) GA88P0916-32SOP(GA8095-32SOP)
S3P821A	KS88P2148	48KB	BFFFh	80QFP 80TQFP	GA-80QFP GA88P2148TQFP(GA821A-80TQFP)
S3P822B	KS88P2264	64KB	FFFFh	160QFP	GA-160QFP
S3F8235	KS88F2316	16KB	3FFFh	64QFP 64LQFP 64SDIP	GA-64QFP TBD GA-64SDIP
S3P8245	KS88P2416	16KB	3FFFh	80QFP 80TQFP	GA-80QFP GA-80TQFP
S3P8249	KS88P2432	32KB	7FFFh	80QFP 80TQFP	GA-80QFP GA-80TQFP
S3P8454	KS88P4504	4KB	0FFFh	80QFP 80TQFP	GA-80QFP GA-80TQFP
S3P8469	KS88P4632	32KB	7FFFh	64SDIP 64QFP	GA-64SDIP GA-64QFP
S3P8475	KS88P4716	16KB	3FFFh	42SDIP 44QFP	GA-42SDIP GA-44QFP
S3P84A4	KS88P41004	4KB	0FFFh	64QFP	GA88P41004-64QFP(GA84A4-64QFP)
S3F84BB*	KS88F41164	64KB	FFFFh	80QFP	GA-80QFP
S3P8615	KS88P6116	16KB	3FFFh	42SDIP 44QFP	GA88P6116-42SDIP(GA8615-42SDIP) GA88P6116-44QFP(GA8615-44QFP)
S3P8629	KS88P6232	32KB	7FFFh	42SDIP 44QFP	GA-42SDIP GA88P6232-44QFP(GA8629-44QFP)
S3P863A	KS88P6348	48KB	BFFFh	42SDIP 44QFP	GA-42SDIP GA88P6232-44QFP(GA8629-44QFP)
S3F8647	KS88F6424	24KB	5FFFh	32SDIP	GA-32SDIP

(Continued)

Device name	ROM	End	Package	Adapter socket

New	*Old*	*size*	*Address*	*type*	*(New name)*
S3P8837	KS88P8324	24KB	5FFFh	42SDIP	GA88P8324-42SDIP(GA8837-42SDIP)
S3P8849	KS88P8432	32KB	7FFFh	42SDIP	GA88P8324-42SDIP(GA8837-42SDIP)
S3F880A	KS88F80048	48KB	BFFFh	42SDIP	GA88P8324-42SDIP(GA8837-42SDIP)

*- Parallel type OTPs can not be supported by GW-Pro2 (88P0916/0424/01424**)***
- ROM size means excluding the font ROM range in case of S3P8837and S3P8849
- TBD means "to be defined later".
*- * means a device under development*

< Appendix C > SAM8 (S3P9xxx, or S3F9xxx Series) adapter socket table

Device name		ROM size	End Address	Package type	Adapter socket (New name)
New	Old				
S3P9004 S3P9014	KS86P0004 KS86P0104	4KB	0FFFh	40DIP	GA86P0004-40DIP(GA9004-40DIP)
S3P921F	KS86P20125	256KB	3FFFFh	100QFP	GA-100QFP
S3P9404	KS86P4004	4KB	0FFFh	30SDIP 32SOP	GA-30SDIP GA-32SOP
S3P9414	KS86P4104	4KB	0FFFh	24SDIP 24SOP	GA-24SDIP GA-24SOP
S3P9428	KS86P4208	8KB	1FFFh	30SDIP 28SOP 32SOP	GA-30SDIP GA-28SOP GA-32SOP
S3P9434	KS86P4304	4KB	0FFFh	16/18/20DIP 20SOP	GA-20DIP GA-20SOP
S3F9444	KS86F4404	4KB	0FFFh	8DIP 8SOP	GA-20DIP GA-8SOP
S3F9454	KS86F4504	4KB	0FFFh	16/20DIP, 20SOP	GA-20DIP GA-20SOP
S3P9608	KS86P6008	8KB	1FFFh	42SDIP 44QFP	GA-42SDIP GA-44QFP
S3P9614	KS86P6104	4KB	0FFFh	20DIP 24SOP	GA-20DIP GA86P6104-24SOP(GA9614-24SOP)
S3F9624*	KS86F60204	4KB	0FFFh	32SDIP	TBD
S3P9638	KS86P6308	8KB	1FFFh	64SDIP 64QFP	GA-64SDIP GA86P6308-64QFP(GA9638-64QFP)
S3P9648	KS86P6408	8KB	1FFFh	42SDIP 44QFP	GA-42SDIP GA-44QFP
S3P9658	KS86P6508	8KB	1FFFh	16DIP 18/20DIP 16SOP 18/20SOP	GA86P6508-16DIP(GA9658-16DIP) GA86P6508-20DIP(GA9658-18/20DIP) GA86P6508-16SOP(GA9658-16SOP) GA86P6508-20SOP(GA9658-18/20SOP)
S3P9664*	KS86P6604	4KB	0FFFh	20DIP 24SDIP 20SOP 24SOP	GA9664-20DIP GA9664-24SDIP GA9664-20SOP GA9664-24SOP

< Appendix D > Other series (S3FBxxx, S3P1860, S3F3xxx, S3F4xxx) Adapter socket

Device name		ROM size	End Address	Package type	Adapter socket (New name)
New	Old				
S3P1860	KS51P860	1KB	03FFh	20DIP 20SOP	GA1860-20DIP GA1860-20SOP
S3FB018	KS85F00108	8KB	1FFFh	30SDIP 32SOP	GA-30SDIP GA-32SOP
S3FB205	KS85F2016	16KB	3FFFh	64QFP	GA-64QFP
S3FB41D	KS85F40113	128KB	1FFFFh	100QFP 100TQFP	GA-S3FB41D-100QFP GA-S3FB41D-100TQFP
S3FB42F	KS85F40225	256KB	3FFFFh	100QFP 100TQFP	GA-100QFP GA-100TQFP
S3FB489	KS85F40832	32KB	7FFFh	64SDIP 64QFP	GA-64SDIP GA-64QFP
S3FB519	KS85F50132	32KB	7FFFh	100QFP	GA-100QFP
S3F340F*	KS17F40025	256KB	3FFFFh	128QFP	GA-128QFP
S3F380D	KS17F80013	128KB	1FFFFh	42SDIP	GA380D-42SDIP
S3P4909	KS32P6632	32KB	7FFFh	100LQFP	GA-S3P4909-100LQFP
S3F441F	KS32F40125	256KB	3FFFFh	64LQFP	GA-S3F441FX